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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/537,558

06/03/2005

Hans Sejr Olsen

10341.204-US

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05/18/2006

NOVOZYMES NORTH AMERICA, INC.

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EXAMINER

CHAWLA, JYOTI

ART UNIT

PAPER NUMBER

1761

DATE MAILED: 05/18/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/537,558

Applicant(s)

OLSEN ET AL.

Examiner

Jyoti Chawla

Art Unit

1761

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 20-38 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 20-38 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. ____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. ____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date <u>6/3/2005</u> . | 6) <input type="checkbox"/> Other: ____ |

DETAILED ACTION

Amendment to the claims dated June 3, 2005 has been acknowledged. Claims 1-19, have been cancelled by the applicant and new claims 20-38 have been added. Claims 20-38 remain pending in the application.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 20 -38 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Regarding **claim 20 (e)** optionally fermenting the mash with a yeast is indefinite because it is unclear whether the "fermentation" step is optional or the fermentation is always done however, "fermentation with yeast" is optional and other microbes like lactic acid bacteria are employed.

Regarding **claim 28**, a broad range or limitation together with a narrow range or limitation that falls within the broad range or limitation (in the same claim) is considered indefinite, since the resulting claim does not clearly set forth the metes and bounds of the patent protection desired. See MPEP § 2173.05(c). Note the explanation given by the Board of Patent Appeals and Interferences in *Ex parte Wu*, 10 USPQ2d 2031, 2033 (Bd. Pat. App. & Inter. 1989), as to where broad language is followed by "such as" and

Art Unit: 1761

then narrow language. The Board stated that this can render a claim indefinite by raising a question or doubt as to whether the feature introduced by such language is (a) merely exemplary of the remainder of the claim, and therefore not required, or (b) a required feature of the claims. Note also, for example, the decisions of *Ex parte Steigewald*, 131 USPQ 74 (Bd. App. 1961); *Ex parte Hall*, 83 USPQ 38 (Bd. App. 1948); and *Ex parte Hasche*, 86 USPQ 481 (Bd. App. 1949).

In the present instance, claim 28 recites the broad recitation "at least 1% (w/w) of the grist is grain" and the claim also recites, "at least 90% or 100% (w/w) of the grist is grain" which is the narrower statement of the range/limitation.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 20-24, 28-30, 32-33, 35-38 are rejected under 35 U.S.C. 102(b) as being anticipated by Ahvenainen et al (US5273762), hereinafter Ahvenainen.

Regarding **claim 20**, Ahvenainen teaches a method for the fermentation of beer.

Ahvenainen teaches :

(a) forming a grist comprising grain (Column 1, lines 28-30);

Art Unit: 1761

(b) forming a mash comprising the grist from step (a) (Column 1, lines 28-32);
(c) liquefying the mash in a step comprising jet-cooking (Column 5, lines 58-60);
(d) saccharifying the liquefied mash (Column 6, lines 1-5);
(e) optionally fermenting the mash with yeast (Column 1, lines 35-40 and Column 2, lines 15-20);
wherein the step (e) is performed after step (d) (Column 1, lines 35-40).

Regarding **claim 21**, Ahvenainen teaches the grist comprising grain from which hull has been removed (Column 4, lines 5-10)

Regarding **claim 22**, Ahvenainen teaches, the liquefaction step (c) where
(c1) jet-cooking the mash at a temperature of 100°C , which falls between applicant's recited range of $85\text{-}140^{\circ}\text{C}$. (Column 5, lines 55-65);
(c2) holding the mash at a temperature of 85°C , which falls between applicant's recited range $55\text{-}95^{\circ}\text{C}$. (Column 5, lines 55-65);
and step (c1) and/or step (c2) is carried out in the presence of an alpha-amylase (Column 5, lines 60-64).

Regarding **claim 23**, Ahvenainen teaches the saccharification step (d) and/or the fermentation step (e) is carried out in the presence of alpha-amylase (Column 5, lines 60-64), beta-amylase (Column 5, line 65 to Column 6, line 10), cellulase (Column 5, lines 60-64), pentosanase and protease (Column 1, lines 28-30).

Regarding **claim 24**, Ahvenainen teaches addition of cellulose to the mash to improve filterability after saccharification (Column 2, lines 1-25), cellulose is a cell wall degrading enzyme, and therefore it would degrade yeast cell wall too. Therefore, Ahvenainen inherently teaches a yeast cell wall degrading enzyme.

Regarding **claim 28**, Ahvenainen teaches barley, maize and rice (grain) to make grist (Column 1, lines 20-50).

Regarding **claim 29**, Ahvenainen teaches the grist comprises malted grain (Column 1, lines 28-30).

Regarding **claim 30**, Ahvenainen teaches wherein the grist comprises malted barley (Column 1, lines 28-30).

Regarding **claim 32**, Ahvenainen teaches addition of hops to the mash prior to cooking step (b1) (Column 1, lines 30-40, Column 6 lines 40-50).

Regarding **claim 33**, Ahvenainen teaches, wherein hops are added to the mash prior to the fermentation step (e) (Column 1, lines 28-40, Column 6 lines 40-50).

Art Unit: 1761

Regarding **claim 35**, Ahvenainen teaches process of making beer, which can be any kind of beer. However, Ahvenainen specifically teaches lager as he uses bottom-fermenting yeast (Column 5, lines 25-30).

Regarding **claim 36**, Ahvenainen teaches wort produced by the process recited by the applicant in claim 20 (Column 1, lines 20-40 and Column 5, lines 50-65).

Regarding **claim 37**, the applicant defines "wort" as the "unfermented liquor following extraction of the grist during mashing " and also defines " a malt extract derived from a wort produced by the process the first aspect " i.e., (Claim 20 steps prior to fermentation). Based on this description since Ahvenainen teaches the process recited by the applicant in claim 20, Ahvenainen inherently teaches malt extract produced by the process of claim 20.

Regarding **claim 38**, Since Ahvenainen teaches all the steps of claim 20 as recited by the applicant therefore, he/she inherently teaches a beer produced by the process of claim 20.

Therefore, claims 20-24, 28-30, 32-33, 35-38 are being anticipated by Ahvenainen.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

Art Unit: 1761

A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459

(1966), that are applied for establishing a background for determining obviousness

under 35 U.S.C. 103(a) are summarized as follows:

Determining the scope and contents of the prior art.

Ascertaining the differences between the prior art and the claims at issue.

Resolving the level of ordinary skill in the pertinent art.

Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 25 and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over by Ahvenainen, as applied to claims 20-24, 28-30, 32-33, 35-38 above, and further in view of Villetaz (US 4439455).

Ahvenainen has been relied on to reject claims 20-24, as discussed above.

Regarding claims 24-26, Ahvenainen teaches the addition of cellulase as discussed above, but is silent as to the source of cellulose or the specific nature of cellulase.

However, Villetaz teaches enzymatic treatment of alcoholic beverages especially yeast infected grape beverages, with an enzyme (fungal/ yeast cell wall degrading enzyme) preparation derived from *Trichoderma harzianum* and the enzyme produced is primarily alpha-1, 3-glucanase. However, both alpha and beta glucanases have been produced by *Trichoderma harzianum* (Abstract and Column 1, line 65 to column 2, line 30 and Column 3, lines 1-10). The glucanases produced by *Trichoderma harzianum* breakdown the beta glucan from the fungal/ yeast cell wall and make must filtering easier by

Art Unit: 1761

breaking down 1, 3-beta glucan and 1,6- beta side chains of the cell wall (Column 1, lines 35-45). Therefore it would have been obvious to one with ordinary skill in the art at the time of the invention to modify Ahvenainen and add the yeast cell wall degrading enzyme produced by *Trichoderma harzianum* as taught by Villetaz to breakdown the glucan and improve the filterability and yield of resulting fermented beverage, i.e., beer. It would have been obvious to choose *Trichoderma harzianum* as the source of enzyme as there are commercially available cell wall degrading enzyme preparations that have been obtained from *Trichoderma harzianum* e.g., by NovoNordisk Denmark.

Claim 27 is rejected under 35 U.S.C. 103(a) as being unpatentable over by Ahvenainen as applied to claims 20-24, 28-30, 32-33, 35-38 above, and further in view of Godtfredsen et al (US4708875), hereinafter Godtfredsen.

Ahvenainen has been relied on to reject claims 20-24, 28-30, 32-33 and 35-38 as discussed above.

Ahvenainen is silent regarding claim 27, however Godtfredsen teaches addition of acetolactate decarboxylase during or after the fermentation step (Abstract) to produce fermented alcoholic beverages like beer with low diacetyl (foul smelling compound) content. Therefore, it would have been obvious to one with ordinary skill in the art at the time of the invention to modify Ahvenainen and add acetolactate decarboxylase enzyme to the mash during or after fermentation as taught by Godtfredsen to avoid strong undesirable smell of diacetyl in the beer (Column 3, lines 30-35) and also to shorten the

Art Unit: 1761

maturation or secondary fermentation process of making an alcoholic beverage like beer.

Claim 31 is rejected under 35 U.S.C. 103(a) as being unpatentable over by Ahvenainen, as applied to claims 20-24, 28-30, 32-33, 35-38 above, and further in view of Brenner et al (US 3795745), hereinafter Brenner.

Ahvenainen has been relied on to reject claims 20-24, 28-30, 32-33 and 35-38 as discussed above.

Regarding claim 31, Ahvenainen teaches grist grain is milled (Column 4, lines 10-15) However, Ahvenainen does not teach dry-milling the grain. Dry milling of grain is well known in the art and Brenner teaches grinding or milling the grain dry, where the grains are steeped subsequently to being ground, granulated or comminuted to allow for a thorough penetration of the enzymes into the interior of the grains during the mashing process (Column 8, lines 42-60). Therefore it would have been obvious to one with ordinary skill in the art at the time of the invention to modify Ahvenainen, based on the teachings from Brenner and use dry milled grain because dry milling gives more control over the grinding process and the particle size can be made extremely fine if desired. Fine ground grain can be digested faster and better by the enzymes in the mash.

Claims 32- 34 are rejected under 35 U.S.C. 103(a) as being unpatentable over by Ahvenainen, as applied to claims 20-24, 28-30, 32-33, 35-38 above, and further in view of combination of Goldstein et al (US5972411), hereinafter Goldstein.

Ahvenainen has been relied on to reject claims 20-24, as discussed above.

Regarding claims 32 –34, Ahvenainen teaches addition of hops prior to cooking step, as discussed above. However, Ahvenainen does not teach addition of hops just prior to fermentation or after the fermentation step. Addition of hops at different steps during the process of brewing is well known and Goldstein teaches addition of hops before cooking “Kettle Hop” and after fermentation “Dry Hopping” (Column 1, lines 30-50). Goldstein also teaches making of a kettle hop flavor compound that can be added to beer prior to fermentation to obtain the desired hop flavor (column 3, lines 35-45). Addition of hops to beer at various steps (cooking, before and after fermentation) gives different hop flavors to the finished fermented product. Therefore, it would have been obvious to one with ordinary skill in the art at the time of the invention to modify Ahvenainen as taught by Goldstein and add hops at different steps, i.e., during cooking, before and after fermentation, because it would give the brewer a greater number of products with different flavors and aroma characteristics by using the same basic process of beer preparation. The versatility of adding hops at different steps would also be cost effective for the brewer as different batches brewed can yield different products without the need for additional equipment.

Remarks/ Conclusion

The prior art made of record as part of USPTO form 892 contains references that have not been relied upon in this office action but are considered pertinent to applicant's disclosure.

Russell et al (WO 90/03732) teaches fungicidal preparations including the alpha and beta glucanases produced by *Trichoderma harzianum*

Bjornvad et al (US 6207236) teaches endo-glucanase enzymes from microbial sources including *Trichoderma harzianum*.

Keim (US 4361651) teaches dry and wet milling processes for making fermentable sugars.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jyoti Chawla whose telephone number is (571) 272-8212. The examiner can normally be reached on 8:00 am to 4:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Milton Cano can be reached on (571) 272-1398. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you


Application/Control Number: 10/537,558

Page 12

Art Unit: 1761

have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Jyoti Chawla
Examiner
Art Unit 1761


KEITH HENDRICKS
PRIMARY EXAMINER